May 12, 2016

Mr. Robert Stein
Connecticut Siting Council
10 Franklin Square
New Britain, CT 06051

Re: Petition No. Petition 1226 - Towantic Switch Station and Line Project

Dear Mr. Stein:

This letter provides the response to requests for the information listed below.

Response to CSC-01 Interrogatories dated 04/28/2016
CSC-001, 002, 003, 004, 005, 006, 007, 008, 009, 010, 011, 012, 013, 014, 015, 016, 017, 018, 019, 020

Very truly yours,

Kathleen Shanley
Manager
Siting, Transmission
As Agent for CL&P
dba EversourceEnergy

cc: Service List

Witness: **Witness Panel**
Request from: **Connecticut Siting Council**

Question:
What is the area bounded by the proposed fenced switching station in square feet or acres? Would that area be crushed traprock?

Response:
The area to be bounded by the proposed switching station fence will be 71,846 square feet or just over 1.6 acres. That area will be topped with crushed stone, per Eversource standards.

Witness: **Witness Panel**
Request from: **Connecticut Siting Council**

Question:
While the tree clearing would be performed by CPV as noted on page 6 of the Petition, approximately how much tree clearing (in acres) would be required for the switching station?

Response:
Approximately 1.7 acres of clearing would be required for the switching station.

Witness: **Witness Panel**
Request from: **Connecticut Siting Council**

Question:
Calculate the amounts of cut and fill required for the proposed switching station.

Response:
Approximately 45,000 cubic yards of cut and fill is required for the proposed switching station.

Witness: **Witness Panel**
Request from: **Connecticut Siting Council**

Question:
Would any blasting be required to construct the switching station, or would mechanical chipping be used if necessary (such as if ledge is encountered)?

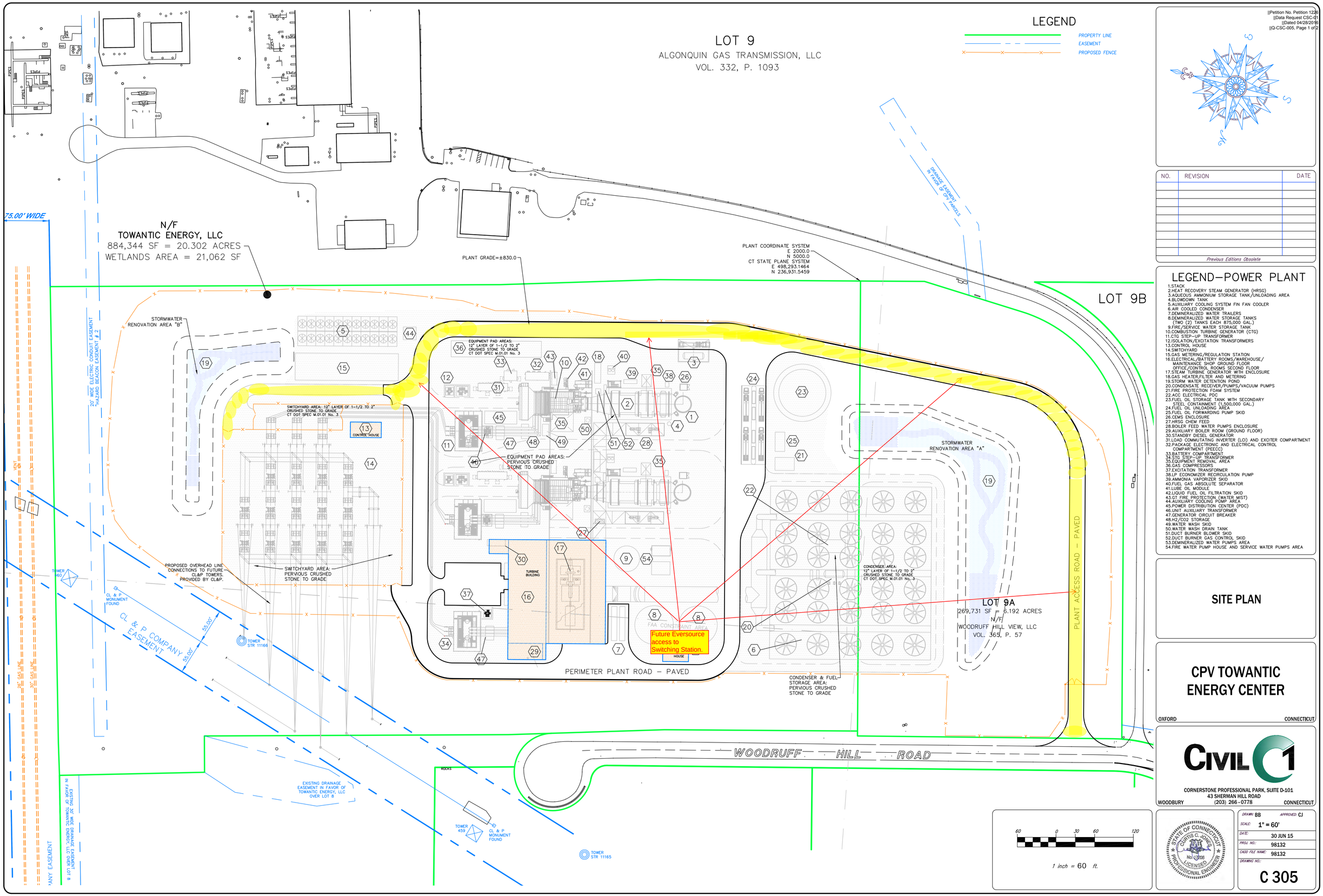
Response:
Neither blasting nor mechanical chipping is anticipated for this construction. In cases where ledge, rock and/or boulders/cobbles are encountered, drilling/coring will be by a rock auger or core barrel fitted with carbide teeth. In the case of ledge, the plan would be to drill into the ledge until "refusal" or until sufficient depth is reached to support the structure.

Witness: **Witness Panel**
Request from: **Connecticut Siting Council**

Question:
Provide a simplified drawing (or aerial photo) depicting existing versus proposed access to the switching station itself. Would all new and/or improved access be gravel? Provide the total length of the access to the switching station.

Response:
The proposed permanent access to the Switching Station will be comprised of a primary access route and a secondary access route. The existing access to the area where the Switching Station will be located is from the Woodruff Hill Road cul-de-sac utilizing the existing ROW gravel access road. The attached aerial photo has been marked-up to indicate the existing access route. The total length from the Woodruff Hill Road cul-de-sac to the Switching Station area via the existing access route is approximately 500 feet. The primary access route will utilize the proposed CPV Towantic paved main access road as shown on the attached, marked-up Drawing #C305. The total length from Woodruff Hill Road to the Switching Station is approximately 1,500 feet. The secondary access route will utilize the modified ROW gravel access road as shown on the attached, marked-up Drawing # 20806-11001. The total length from the Woodruff Hill Road cul-de-sac to the Switching Station area via this secondary access route is approximately 620 feet.


Woodruff Hill Road cul-de-sac
Existing Eversource access to Switching Station area.



||Petition No. Petition 1226
||Data Request CSC-01
||Dated 04/28/2016
||Q-CSC-005, Page 1 of 2

NO.	REVISION	DATE

Previous Editions Obsolete

LEGEND–POWER PLANT

1. STACK
2. HEAT RECOVERY STEAM GENERATOR (HRSG)
3. AQUEOUS AMMONIUM STORAGE TANK/UNLOADING AREA
4. BLOWDOWN TANK
5. AUXILIARY COOLING SYSTEM FIN FAN COOLER
6. AIR COOLED CONDENSER
7. DEMINERALIZED WATER TRAILERS
8. DEMINERALIZED WATER STORAGE TANKS (TWO (2) TANKS EACH 875,000 GAL.)
9. FIRE/SERVICE WATER STORAGE TANK
10. COMBUSTION TURBINE GENERATOR (CTG)
11. CTG STEP-UP TRANSFORMER
12. ISOLATION/EXCITATION TRANSFORMERS
13. CONTROL HOUSE
14. SWITCHYARD
15. GAS METERING/REGULATION STATION
16. ELECTRICAL/BATTERY ROOMS/WAREHOUSE/ MAINTENANCE SHOP GROUND FLOOR OFFICE/CONTROL ROOMS SECOND FLOOR
17. STEAM TURBINE GENERATOR WITH ENCLOSURE
18. GAS HEATER,FILTER AND METERING
19. STORM WATER DETENTION POND
20. CONDENSATE RECEIVER/PUMPS/VACUUM PUMPS
21. FIRE PROTECTION FOAM SYSTEM
22. ACC ELECTRICAL PDC
23. FUEL OIL STORAGE TANK WITH SECONDARY STEEL CONTAINMENT (1,500,000 GAL.)
24. FUEL OIL UNLOADING AREA
25. FUEL OIL FORWARDING PUMP SKID
26. CEMS ENCLOSURE
27. HRSG CHEM FEED
28. BOILER FEED WATER PUMPS ENCLOSURE
29. AUXILIARY BOILER ROOM (GROUND FLOOR)
30. STANDBY DIESEL GENERATOR
31. LOAD COMMUTATING INVERTER (LCI) AND EXCITER COMPARTMENT
32. PACKAGE ELECTRONIC AND ELECTRICAL CONTROL COMPARTMENT (PEECC)
33. BATTERY COMPARTMENT
34. STG STEP-UP TRANSFORMER
35. EQUIPMENT REMOVAL AREA
36. GAS COMPRESSORS
37. EXCITATION TRANSFORMER
38. LP ECONOMIZER RECIRCULATION PUMP
39. AMMONIA VAPORIZER SKID
40. FUEL GAS ABSOLUTE SEPARATOR
41. LUBE OIL MODULE
42. LIQUID FUEL OIL FILTRATION SKID
43. GT FIRE PROTECTION (WATER MIST)
44. AUXILIARY COOLING PUMP AREA
45. POWER DISTRIBUTION CENTER (PDC)
46. UNIT AUXILIARY TRANSFORMER
47. GENERATOR CIRCUIT BREAKER
48. H2/CO2 STORAGE
49. WATER WASH SKID
50. WATER WASH DRAIN TANK
51. DUCT BURNER BLOWER SKID
52. DUCT BURNER GAS CONTROL SKID
53. DEMINERALIZED WATER PUMPS AREA
54. FIRE WATER PUMP HOUSE AND SERVICE WATER PUMPS AREA

SITE PLAN

CPV TOWANTIC ENERGY CENTER

OXFORD CONNECTICUT

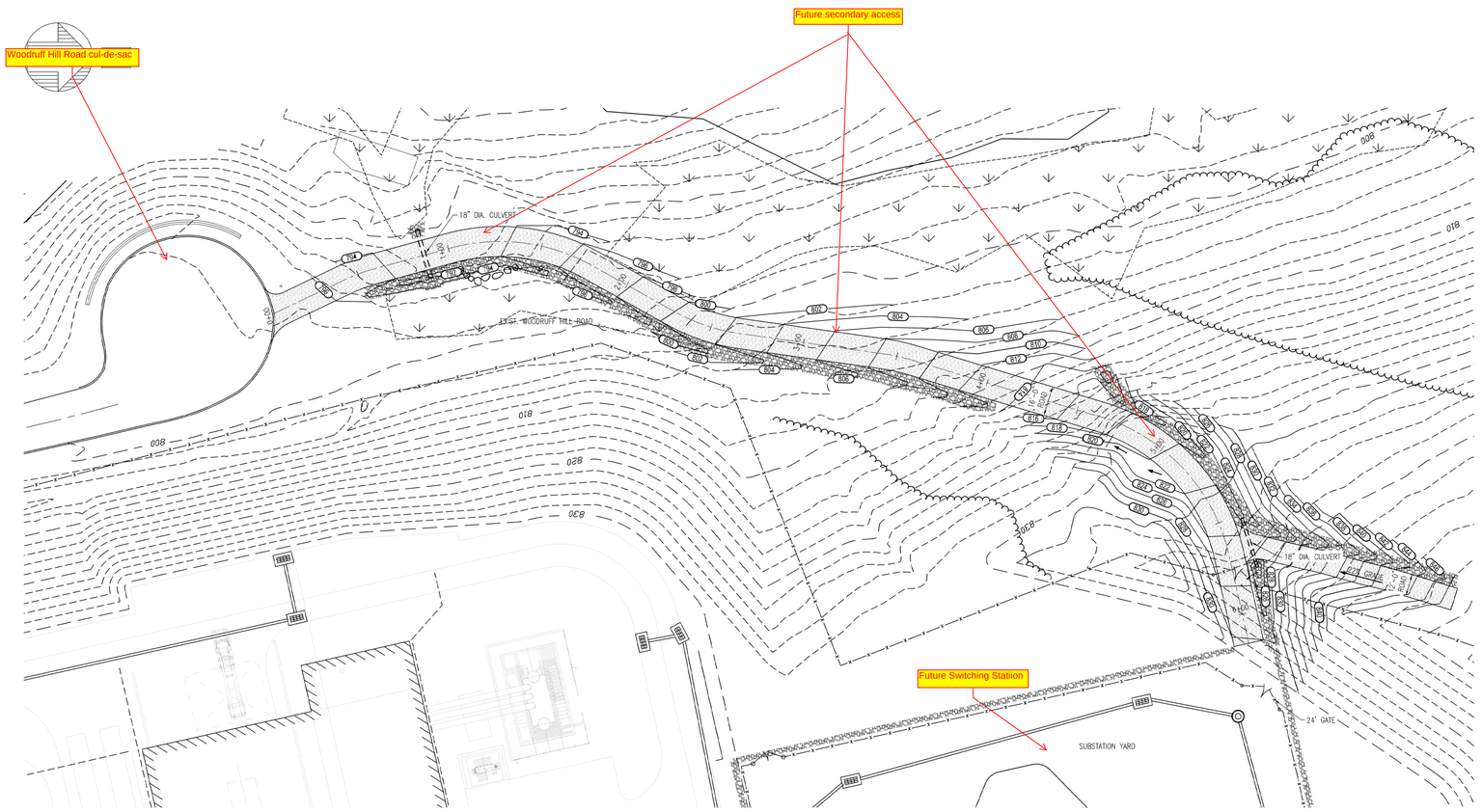
CIVIL 1
CORNERSTONE PROFESSIONAL PARK, SUITE D-101
43 SHERMAN HILL ROAD
WOODBURY (203) 266 - 0778 CONNECTICUT

60 0 30 60 120

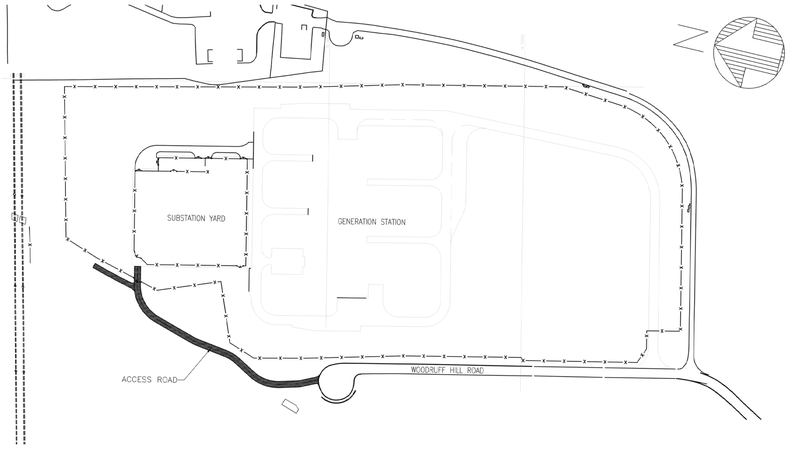
1 inch = 60 ft.

STATE OF CONNECTICUT CURTIS C. JOSEPH No. 17208 LICENSED PROFESSIONAL ENGINEER

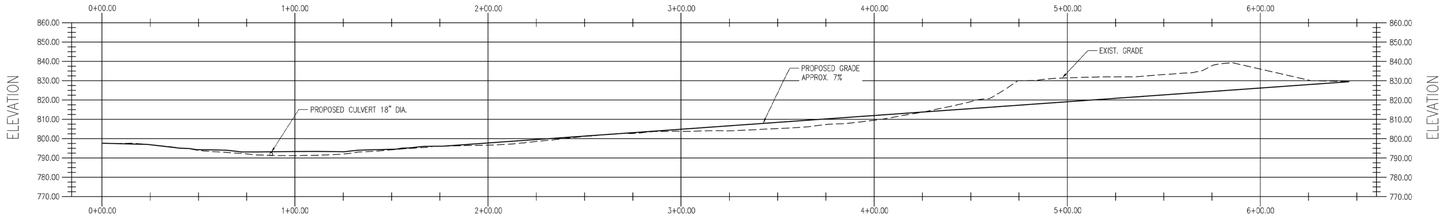
DRAWN: BB	APPROVED: CJ
SCALE:	1" = 60'
DATE:	30 JUN 15
PROJ. NO.:	98132
CADD FILE NAME:	98132
DRAWING NO.:	C 305



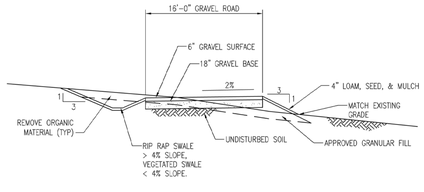
ACCESS ROAD PLAN
SCALE: 1" = 30'



LOCATION PLAN
SCALE: 1" = 150'



PROFILE ALONG BASELINE
HORIZONTAL SCALE: 1" = 30'
VERTICAL SCALE: 1" = 30'



TYPICAL ROAD SECTION
SCALE: N.T.S.

LEGEND

- 830 — PROPOSED CONTOUR
- EXISTING CONTOUR
- EXISTING WETLAND
- PROPOSED GRAVEL ROAD
- FENCELINE
- SUBSTATION YARD

PRELIMINARY
30% SUBMITTAL 04/06/16

NO.	DATE	AS BUILT REVISIONS	BY	CHK	APP	APP
–	–	–	–	–	–	–

REV AA NEW DRAWING

REVISIONS DURING CONSTRUCTION						
AA	–	NEW SWITCHING STATION WO# 40430101		RST	–	–

EVERSOURCE ENERGY

TITLE
TOWANTIC 3P
SITE DEVELOPMENT
CIVIL PLAN & DETAILS
OXFORD, CT

BY	RST(PE)	CHKD	PSK(PE)	APP	–	APP	PE
DATE	–	DATE	–	DATE	–	DATE	–
H-SCALE	N.T.S.	SIZE	E	FIELD BOOK & PAGES			
V-SCALE	N.T.S.	V.S.		R.E. DWG			
P.E. PROJ. NUMBER				DWG NO.			20806-11001

Witness: **Witness Panel**
Request from: **Connecticut Siting Council**

Question:
What is the tallest proposed object within the proposed switching station (e.g. terminal structure at approximately 67 feet)?

Response:
The tallest proposed objects within the proposed switching station will be the line terminal structures, which will be approximately 70 feet above final grade, with a 10-foot high lightning mast mounted on top of each of these structures.

Witness: **Witness Panel**
Request from: **Connecticut Siting Council**

Question:
What size fence and mesh size would be utilized for the switching station? As an anti-climbing measure, has Eversource considered utilizing a mesh size that is smaller than the typical 2-inch? Would the fence have barbed wire?

Response:
The fence height will be 7 feet above grade and will consist of a standard aluminized steel with a 1 and 1/4 inch mesh. All perimeter fencing will be topped with three strands of barbed wire.

Witness: **Witness Panel**
Request from: **Connecticut Siting Council**

Question:
"Baldwin Tap" is identified on Sheets 11 and 12. Identify the location of "Oxford Tap" by sheet number and structure number(s).

Response:
The Oxford Tap is located just south of existing structure 1446, which is depicted on Sheet 25. Following construction, it will be located between structure 1446 and the new dead end structure, depicted as 1446A.

Witness: **Witness Panel**
Request from: **Connecticut Siting Council**

Question:
Provide the structure number of the tallest proposed transmission structure (e.g. 140 feet) as noted on page 4 of the Petition or as applicable.

Response:
Since the petition was filed with the Council, Eversource has been able to determine final structure heights. Though some structures are proposed to be taller than the existing structures, for reasons articulated in the petition, other structure heights have decreased overall. The tallest structure, structure 1487, is now proposed to be at 126 feet (mapsheet 7 of 26).

Witness: **Witness Panel**
Request from: **Connecticut Siting Council**

Question:
Would all proposed new or replacement structures be galvanized steel to match the existing structures to remain? Are there any weathering steel transmission structures in the vicinity of Eversource's proposed project?

Response:
All new structures are proposed to be galvanized steel. There are no weathering steel structures in the vicinity of the proposed project.

Witness: **Witness Panel**
Request from: **Connecticut Siting Council**

Question:
Eversource seeks to maintain the double-circuit tower (DCT) configuration for the 1575 and 1585 lines (except for replacing lattice structures with monopoles). Has Eversource determined that it is not necessary to separate the two circuits onto single-circuit structures to comply with reliability standards?

Response:
Eversource has determined that it is not necessary to separate the 1575 and 1585 lines and proposes to maintain the double-circuit tower (DCT) configuration using a monopole design. This is based on a review of these circuits and a determination that they comply with the system reliability standards set forth by the North American Electric Reliability Council (NERC), the Northeast Power Coordinating Council (NPCC) and the Independent System Operator - New England (ISO-NE).

Witness: **Witness Panel**
Request from: **Connecticut Siting Council**

Question:
On Page B-3 of the Petition, four new structures would be located within the 100-year flood zone. Would any new structures be located within the 500-year flood zone? How many? Has Eversource sought to avoid flood zones for structure locations where feasible?

Response:
Avoidance of impacts to floodway and flood plain areas has been incorporated into the design, to the maximum extent practicable. No structures are proposed to be located within the floodway. Three of the structures are proposed to be located within the 100-year flood zone (structures 1473, 1478C and 1479). Two structures would be constructed within the 500-year flood zone, but outside of the 100-year flood zone (structures 1480 and 1486A).

Witness: **Witness Panel**
Request from: **Connecticut Siting Council**

Question:
On Sheets 10 and 11, would the proposed "Construction Mat to Span Wetland and Vernal Pool" create any permanent adverse impacts to the vernal pool?

Response:
The Project does not anticipate any permanent adverse impacts to the vernal pool located within Wetland FF, as depicted on mapheets 10 and 11. Temporary crossing of this vernal pool will be at a narrow point of the pool (see photo below) which is approximately 8 feet wide. A single construction mat will completely span this resource and will be removed immediately after work is completed in this area.

Witness: **Witness Panel**
Request from: **Connecticut Siting Council**

Question:
Provide a detailed vernal pool analysis consistent with Calhoun and Klemens (2002) Best Development Practices for the existing vernal pools in the vicinity of the proposed project. Could construction be performed outside of the active breeding season for vernal pool species?

Response:
See attached Vernal Pool Report which confirms the existence of three vernal pools in the project area.

Work associated with structures 1479 through 1483 (mapheets 9, 10 and 11), which occurs within or near two of the three vernal pools (FF and GG) will be conducted outside of the breeding season for the vernal pool species, which is March through July. The only work conducted within or near vernal pools during the breeding season will be the reconductoring of Structure 1447 within the vernal pool of Wetland L. This is unavoidable because that work needs to be done during the scheduled outage period of February, 27, 2017 to June 15, 2017. However, as noted in the petition and on mapheet 25, this work will be done manually with no vehicles allowed in the resource area and would deploy vernal pool BMPs to protect the pools' integrity.

VERNAL POOL ASSESSMENT REPORT
Towantic Line Modification and Switching Station Project
Waterbury, Middlebury and Oxford, Connecticut

May 2016

Introduction


Spotted Salamander Egg Mass from Pool GG-1, March 31, 2016

GZA conducted an on-site vernal pool assessment and breeding amphibian survey of wetland areas along the 1575/1585 Transmission Line in support of the Towantic Line Modification and Switching Station project. This survey was conducted between the Bunker Hill Substation in Waterbury and structure 1446, just north of the Waterbury Oxford Airport in Oxford, CT on March 31, 2016. The purpose of this vernal pool assessment was to identify and verify the presence of active of vernal pools within the project corridor. This assessment was able to build upon two prior studies that occurred along portions of this corridor as well as review additional potential vernal pools that were identified by GZA during the 2015 project corridor wetland delineation. The two prior studies included: (1) an AECOM 2011 study in support of the 1990 Transmission Line project; and (2) a Davison Environmental 2015 study to support the Towantic Generating Station project. Table 1 – Potential Vernal Pools lists the five potential vernal pool areas within their respective wetland systems based on the previous work along this corridor and gives the source of the information.

Table 1: Potential Vernal Pools[1]

Wetland ID	*Plan Sheet*	*Description & Date of Original Identification*
L	25	Pool along intermittent stream (AECOM 2011)
J	23	Small "low" area within larger wetland in ROW; part of a larger, off site, pool. (Davison Environmental 2015).
FF	10 & 11	Long ditch across ROW (AECOM 2011).
GG	9	Large pool (AECOM 2011).
PP	1	Small isolated wetland (GZA, August 2015).

1 Wetland ID and plan sheet designation refers to drawings contained in the April 6, 2016 Towantic Line Upgrade and Switching Station Petition for Declaratory Ruling

The wetlands identified in Table 1 were delineated in August 2015, for the purposes of wetland delineation and identification of potential vernal pool areas, and again inspected by a GZA Wetland Ecologist on March 31, 2016 for the purposes of conducting a confirmatory vernal pool assessment. The survey was conducted to determine if each wetland: 1) had the physical features that define the wetland, or a portion thereof, as a vernal pool and; 2) had breeding obligate or facultative vernal pool species.

The State of Connecticut and US Army Corps of Engineers (US ACOE) both define vernal pools. The State of Connecticut relies solely on physical features (i.e., confined depression with no permanent outlet stream that holds water for 2 plus months during the growing season, lacks fish and dries out by late summer in most years). The US ACOE's definition is similar, defining the feature as a temporary body of water occurring in a shallow depression that fills in the spring and dries up in the summer, but also indicates that it supports breeding populations of species adapted to reproducing in these habitats. For the purpose of this study, both physical and biological components were assessed, and a likelihood of the potential vernal pool area to support viable vernal pool habitat was made. At each location, the pool and surrounding wetland and upland habitat were characterized and morphological features and biological components were observed and recorded. Using this information, GZA completed the US ACOE Vernal Pool Characterization Form and a Tier assessment was made based on the vernal pool assessment outlined in Calhoun and Klemens (2002). The US ACOE Forms and Tier Assessment Forms are provided as Attachment A for the viable vernal pools.

Assessment of Potential Vernal Pool Areas

As indicated above, GZA conducted the vernal pool assessment on March 31, 2016. This field inspection was scheduled based on general knowledge of ongoing vernal pool breeding activity in central and southern CT being observed for a period of approximately two weeks prior to this date and GZA's assessment. The following observations and documentation were completed at each potential vernal pool:

- physical features (pool shape, size, depth and landscape position) were examined to determine if the area could physically hold water regardless of hydroperiod;
- if signs of prolonged hydroperiod in the area of pooling (i.e water lines, water stained leaves, algae) were present, a biological survey of the pool was conducted, looking for signs of breeding vernal pool amphibians (both facultative and obligate) as well as other vernal pool dependent fauna;
- the hydrology of each pool (observed water depth, likely maximum water depth, and assumed hydroperiod) was noted;
- US ACOE vernal pool characterization forms were completed, which also included an assessment of the relative ecological integrity and makeup of the surrounding vernal pool envelope; and
- Viable pool observed, Used Tier Classification of the Vernal Pool as per Calhoun and Klemens, 2002.

The results of this work are presented in *Table 2 Results of GZA Potential Vernal Pool Assessment, 2016*.

Table 2 Results of Potential Vernal Pool Assessment, 2016

Vernal Pool No.[1]	Sheet(s)[2]	Physical Features Present	Biological Component Present	Hydrology Present	Determination Vernal Pool (Yes/No)	Notes
L	25	Yes	Yes	Yes	Yes	Pool along intermittent stream, large and deep
J	23	Yes	No	No	No	Depressed portion of larger wetland, small area, shallow, shallow water (1") in deepest area. Larger pool complex present off site to west.
FF	10 & 11	Yes	Yes	Yes	Yes	Long ditch across ROW, moderate quality pool
GG	9	Yes	Yes	Yes	Yes	High quality pool
PP	1	Yes	No	No	No	Isolated Depression, does not appear to have proper hydrology, no breeding amphibians found.

[1] GZA 2015/2016 designation; [2] See attached drawings

A detailed summary of each vernal pool is provided below.

Wetland L: The potential vernal pool located in Wetland L is a large, long and linear area of pooled water along an intermittent stream. The intermittent stream appears to have a constriction beneath the bike trail right-of-way (ROW), which causes water to pool along the northern side of the trail creating the open water areas previously identified as vernal pool habitat by AECOM in 2011. Structure 1447 is located within the wetland and area of pooling. In March 2016, GZA observed inundation to the limits of the vernal pool boundary as demarcated on Sheet 25. This cryptic pool is mostly open water, centered within the transmission line ROW with shrubby edge areas vegetated by highbush blueberry, silky dogwood and winterberry. Some forested wetland areas are present on the periphery, dominated by red maple. The pool is approximately 80 feet wide, centered

Pool in Wetland L, March 31, 2016

along the intermittent stream. Observed water depth varies, with most of the pool 24-30" inches in depth, with deeper area in the center toward the flow channel. The substrate is mucky with muck depth 12-24" inches in some of the deeper areas of pooled water. The pool has good plant structure, particularly along the edges for egg attachment sites in the form of emergent shrubs and some submersed and emergent herbaceous vegetation. Hydrologically, it appears that this pool is inundated most of the year, with the edges likely drying out by mid-summer. The pool was original observed by AECOM to have one yellow spotted salamander (*Ambystoma maculatum*) egg mass and calling spring peepers in 2011. GZA observed 15 yellow spotted salamander egg masses along the southern shoreline in addition to 10 wood frog (*Rana lithobates*) egg masses in this same area. Due to water depth, the north side was not investigated. Calling spring peepers (*Pseudacris crucifer*) were also heard during our 2016 survey. In addition to these amphibian species, numerous caddis fly larvae were found during our visit.

Based on our assessment this potential vernal pool has functional vernal pool habitat, despite being located along an intermittent stream. It appears that the wetland has deeper pockets that hold water, and the presence of a temporary high flow outlet still qualifies a portion of this wetland as a vernal pool under both State of CT and US ACOE standards. Based on the vernal pool assessment form (Calhoun and Klemens, 2002), this pool classifies as Tier I vernal pool with high quality in-pool structure and biology within a relatively undeveloped, forested vernal pool envelope.

Pool in Wetland J, March 31, 2016

Wetland J: This previously identified potential vernal pool (AECOM 2011) is a small, slightly depressed, area within a larger shrub wetland located in the ROW on a gradual south facing slope. The potential vernal pool area is approximately 20 feet in diameter and ringed by dense multiflora rose and riverbank grape. The central portion is slightly more open and dominated by sensitive fern and tussock sedge. The central portion of the ROW pool had saturated soils, with small areas (20%) of the pool having 1 inch depth of observed standing water. Evidence of deeper water ($\leq$ 6 inches) was present based on staining of the adjacent shrubs. No standing water was observed during GZA's August 2015 wetland delineation.

During this assessment, GZA noted that there was a separate, vernal pool area to the east, outside of the ROW but located within the same contiguous wetland. The vernal pool outside of the ROW is a larger area and has deeper standing water than the smaller pool within the ROW. Based upon this current assessment, the area of pooling within the ROW does not appear to qualify as a vernal pool. It does not hold water for long periods of time and appears separate and disconnected from the larger vernal pool area outside of the ROW. GZA did not observe any facultative or obligate vernal pool amphibians within

the ROW pool area. Further, based on the observed hydrology and local micro-topography in the ROW pool area, the anticipated maximum depth of inundation is limited to about six inches.

We note that the Davison Environmental 2015 report referenced a single vernal pool that joined the small pool area within the ROW with the larger pool outside of the ROW. Conversely, the 2011 AECOM survey did not identify the area within the ROW as having any potential or observed vernal pool characteristics.

Our current findings do not support the finding of a vernal pool within the ROW for this area. The area within the ROW does not appear to provide the necessary hydrology to support vernal pool amphibians in the completion of their life cycle. However, this area within the ROW may provide some general habitat for vernal pool fauna from the larger pool to the east (e.g., hydration, forage) as it intermittently fills and dries over the course of the summer. The ROW pool does not score on the Calhoun and Klemens (2002) tier system because the pool had no observed biological activity.


Pool in Wetland LL, March 31, 2016

Wetland FF: This potential vernal pool is a long, linear, narrow ditch (5-10 foot wide) within a larger wetland system that crosses the ROW and parallels the ROW along the western side, toward State Highway 188 (near Structure 1480; but not within or immediately adjacent to area of pooling). This wetland was previously identified by ENSR in 2011 as a vernal pool. Standing water was observed along the entire ditch, with varying depths present. No flow was observed. Most of the area was inundated by 6-12 inches of water with deeper areas having 18-24 inches of water at intermittent locations. The maximum potential depth of inundation, assuming the entire ditch was filled, is about 2-3 feet deep. The bottom of the ditch is vegetated by various sedges, which indicates that the pool likely dries up at least by mid-summer. The edges of the ditch were vegetated by various gramanoids, forbs and shrubs. In 2011, AECOM identified two wood frog egg masses in this pool. In March 2016, GZA identified 15 wood frog egg masses, within this pool. It is noted that the pool extends past the ROW to the west and this portion of the pool contained additional wood frog egg masses. Based on our assessment, this area qualifies as vernal pool habitat both according to the US ACOE and CT standards. Using the vernal pool assessment sheet (Calhoun and Klemens, 2002), this pool classifies as Tier I vernal pool with high quality in-pool structure and biology within a relatively undeveloped, forested / shrub / meadow vernal pool envelope.

Wetland GG: This wetland consists almost entirely of the area of pooling, and appears to have been constructed in the past as a farm or ornamental pond, with an upland island in the center. There is no structure immediately adjacent to or within the area of pooling. There is no current evidence of use or maintenance of vegetation for purposes of an ornamental or farm pond. The eastern side of the pool is

a narrow, deep, ditch with stone lined walls. This area is 12-30 inches in depth, shaded and lacking emergent vegetation. The western side of the pool is an open, herbaceous wetland dominated by sedges and some shrub cover, with open water that about 6-24 inches deep. AECOM 2011 identified 100+ wood frog egg masses, numerous hatched wood frog tadpoles, and 30-50 yellow spotted salamander egg masses. In addition, they found live wood frog and yellow spotted salamander adults as well as eastern newts and spring peepers. GZA found similar species with 40 wood frog egg masses observed in addition to 12 yellow spotted salamander egg masses. This pool appears entirely self- contained, with no inlet or outlet and is likely supplied primarily by groundwater interception and precipitation. It is unlikely if the pool completely dries up; the deeper portions may hold water well into the fall, and may stay completely inundated in some years. No fish were observed. It should also be noted that off site, to the southeast there is another high quality vernal pool outside of the ROW, which has a 60 foot± diameter. The off-site pool is quite deep and may be an old foundation or excavation hole. This pool was also observed to have numerous wood frog and yellow spotted salamander egg mases. Based on the vernal pool assessment sheet (Calhoun and Klemens, 2002), this pool classifies as Tier I vernal pool with high quality in-pool structure and biology within a relatively undeveloped, forested vernal pool envelope.

Pool in Wetland PP, March 31, 2016

Wetland PP: This previously identified potential vernal pool (AECOM 2011) is a small (20' circumference), isolated, wetland, identified by GZA during wetland delineation and assessment in August 2015. This area was not observed to be holding any water in August 2015, but based on geomorphic position and presence of wetland shrubs (meadowsweet) and wetland sedges, it was judged that it might have potential as vernal pool habitat. It was re-visited in 2016 to observe hydrology and any biological activity present. The March 2016 site visit found that the pool held no water, with only saturated soils observed in the central area of the wetland. No breeding amphibians were found within or proximal to the wetland. The upland habitat around the pool is fairly comprised from the substation directly to the north, gravel roads in the ROW and suburban development to the north and east. This wetland does not qualify as a vernal pool under the CT or ACOE criteria. This wetland depression does not score on the Calhoun and Klemens (2002) tier system because the pool had no observed seasonal pooling or biological activity, and does not appear likely to provide such even during wetter years. Further, the surrounding upland habitat is highly developed.

Summary

GZA conducted an on-site vernal pool assessment and breeding amphibian survey of wetland areas along the 1575/1585 Transmission Line in support of the Towantic Line Modification and Switching Station

project. Five potential vernal pools were previously identified as having confirmed or potential habitat supportive of breeding vernal pool species along the study corridor (AECOM 2011; Davison 2015; GZA 2015). GZA's March 2016 assessment consisted of revisiting each location during the active breeding season to verify if the previously identified potential vernal pools provided ongoing functional habitat for vernal pool species, including the examination of morphological features and biological components. Further, observed hydrology was noted and long term hydrology was inferred based on geomorphic positon and other field observations. Of the five pools reviewed, three were confirmed to be vernal pools and two were determined to have no likelihood of viable vernal pool habitat.

- Vernal Pools
  - Pool L: Wood Frog and Yellow Spotted Salamander egg masses found. Spring Peepers and Caddis fly larvae present. Pool depth of 24-36 inches observed.
  - Pool FF: Wood Frog egg masses found. Pool depth of 18-24 inches observed.
  - Pool GG: Wood Frog and Yellow Spotted Salamander egg masses found. Pool depth of 6-24 inches observed.
- Non-Vernal Pool Depressions
  - Pool J: Only 1 inch depth of water in ROW observed and no vernal pool fauna present. ROW depression is separate from active vernal pool outside of ROW to the east.
  - Pool PP: No pooling observed and no vernal pool fauna present.

Pools L, FF and GG are likely active vernal pools in most years. Conversely, two depressions (Pools J and PP) were determined to not be vernal pools due to lack of hydrology and lack of biological activity. However, these depression wetlands may still provide lower quality general amphibian habitat.

Vernal Pool Protection Measures

The project has been designed to protect vernal pools and adjacent habitats to the maximum extent practicable. This will be accomplished through the following measures:

- During construction Eversource will follow established best management practices to avoid disturbance to vernal pools and limit any potential effects to areas around vernal pools.

- Erosion and Sedimentation (E&S) controls will be constructed and maintained to avoid/minimize sediment deposition effects to vernal pools and wetlands. Where passage through the construction area is required to reach resource areas (forests, streams, vernal pool, etc.). E&S controls will be installed in a manner that does not inhibit movement through the construction area. Where appropriate, exclusionary silt fencing will be installed to prevent the state-listed species from accessing areas where they may become trapped. All silt fencing and perimeter methods will be removed after work is completed and exposed soils are stable so reptile and amphibian movements are not restricted. Other measures may include, but not be limited to; syncopated silt fencing and/or straw wattles in the immediate vicinity of vernal pools, and aligning erosion and sedimentation controls to avoid bifurcating vernal pool habitat. The Project will avoid utilizing

plastic netting, which may be found in a variety of erosion control products (e.g., erosion control blankets, straw wattles, and reinforced silt fence). Controls will be removed promptly after final stabilization has occurred.

- Appropriate E&S control measures will be designed and implemented in a manner that allows unencumbered amphibian access to vernal pools and migratory pathways and minimizes the potential for sediment deposition in wetlands, vernal pools, or breeding areas.

- The removal of low-growing vegetation around vernal pools will be minimized by utilizing construction mats where access is needed for the rebuild portion of the work. If limited low growing woody vegetation (trees and shrubs) need to be removed to provide a stable surface for construction mat installation, the cut vegetation (slash) will be left in place to provide cover and promote the development of coarse woody debris and detritus and to minimize soil disturbance.

- Temporary crossing of the vernal pool within Wetland FF will be done at a narrow point of the pool, therefore a single construction mat will be installed to completely span the vernal pool. The construction mats will be removed immediately after work is completed in this area.

- Work associated with structures 1479 through 1483 (Sheets 9, 10 and 11) which occurs within or near two of the three vernal pools in the project area (FF and GG) will be conducted outside of the breeding season for vernal pool species which is March thru July.

- The only work conducted within or near vernal pools during the breeding season will be the reconductoring of Structure 1447 which is located within Wetland L. This is unavoidable because that work needs to be done during the scheduled outage period of February, 27, 2017 to June 15, 2017. However, as noted on Sheet 25 of 26, this work will be done manually with no vehicles allowed in the resource area.

References

The references cited in this report include the following:

AECOM. 2011. Inventory of Vernal Pools and Amphibian Breeding Habitats Along the 1990 Transmission Line Structure Replacement Project. Prepared for The Connecticut Light and Power Company. May 2011.

Calhoun, A.J.K. and M.W. Klemens, 2002. Best development practices: Conserving pool-breeding amphibians in residential and commercial developments in the northeastern United States. MCA Technical Paper No. 5, Metropolitan Conservation Alliance, Wildlife Conservation Society, Bronx, New York.

Davison Environmental, 2015. Wildlife Survey Results, CPV Towantic Energy Facility, Woodruff Hill Road, Oxford, Connecticut. July 14, 2015.

If you have any questions regarding this Vernal Pool Assessment Report, please feel free to contact the undersigned at your convenience at 413-726-2100.

Sincerely,
GZA, Inc.

Steven Riberdy, PWS, CWB, PSS
Senior Ecologist

Stephen L. Lecco, A.I.C.P, C.E.P.
Senior Project Manager

Paul G. Davis, Ph.D., PWS, CPSS
Consultant Reviewer

Attachments:

Additional Site Photos
Site Plans
Forms

SITE PHOTOS

Pool at Wetland L

Pool at Wetland L

Spotted Salamander Egg Mass from Pool GG

Pool Outside of ROW near Pool GG-1

Pool FF

Wood Frog Egg Masses in Pool FF

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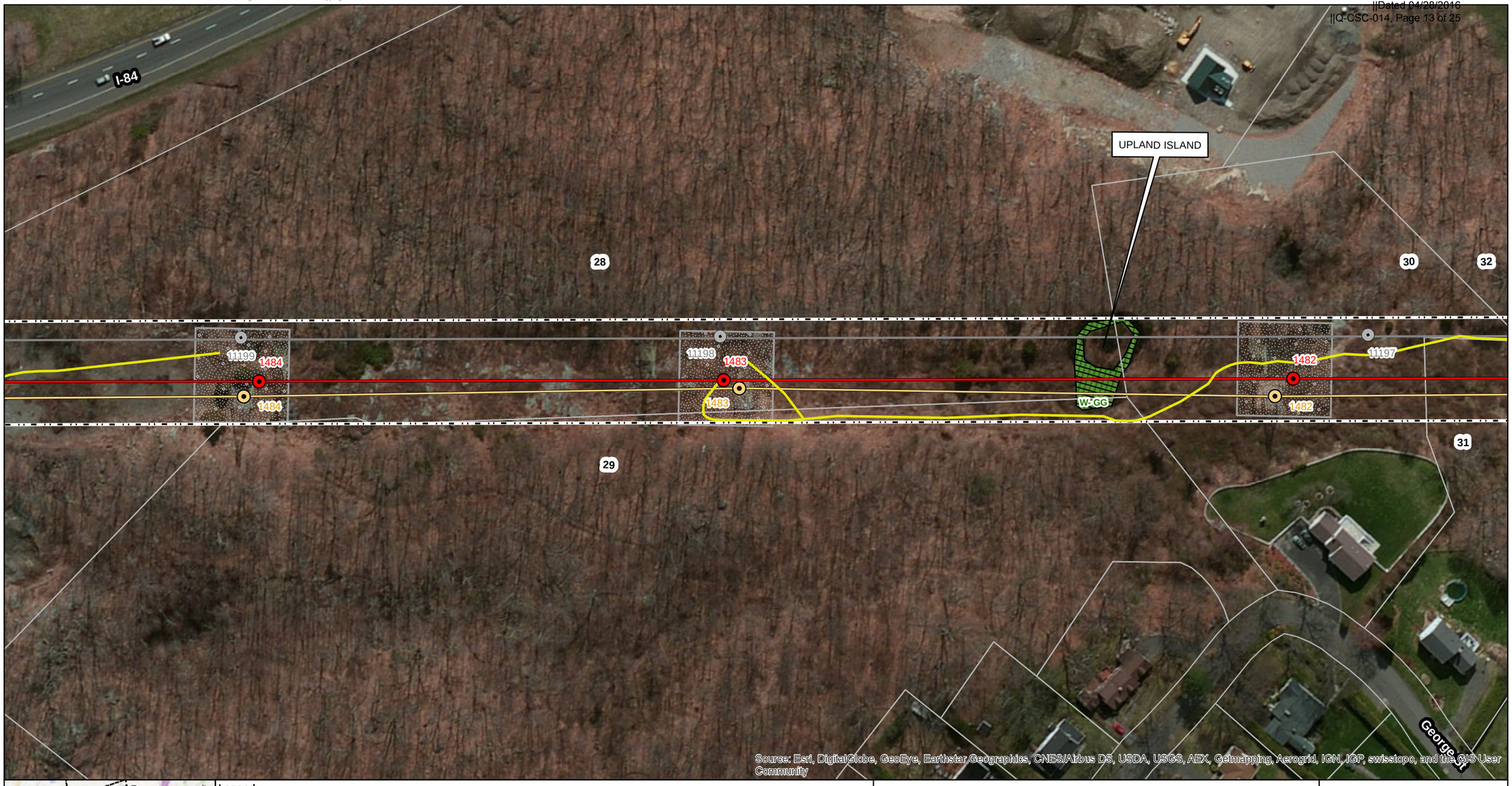
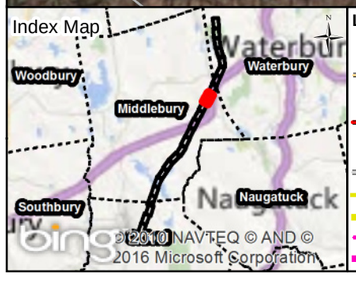


Index Map



Legend

- Ex. 1575/1585 Structures
- Ex. 1575/1585 Line
- Proposed 1575/1585 Structures
- Proposed 1575/1585 Line
- Ex. 1990 Structures
- Existing 1990 Line
- Access - Existing
- Access - Proposed
- Access - Off ROW Existing
- Access - Off ROW Proposed
- Proposed Construction Mats
- Proposed Construction Pad
- Vernal Pools
- Field Delineated Wetlands
- Parcels
- ROW Limits
- Perennial Stream/River
- Intermittent Stream
- Culverts
- Rare Species Habitat
- FEMA 100 Year Flood Zone
- FEMA Regulatory Floodway
- 1 Line List Properties Reference Number
- Existing Distribution Structure To Be Removed
- Proposed Distribution Structure

1 inch = 100 feet

0 50 100 200

Feet

Data Sources:
CAI
GZA
Eversource
CT DEEP
AECOM, Davison
FEMA
Base Map acquired from ESRI Online.

TOWANTIC SWITCHING STATION AND LINE PROJECT

APRIL 1, 2016

WATERBURY, MIDDLEBURY, & OXFORD, CT
PAGE 9 OF 26

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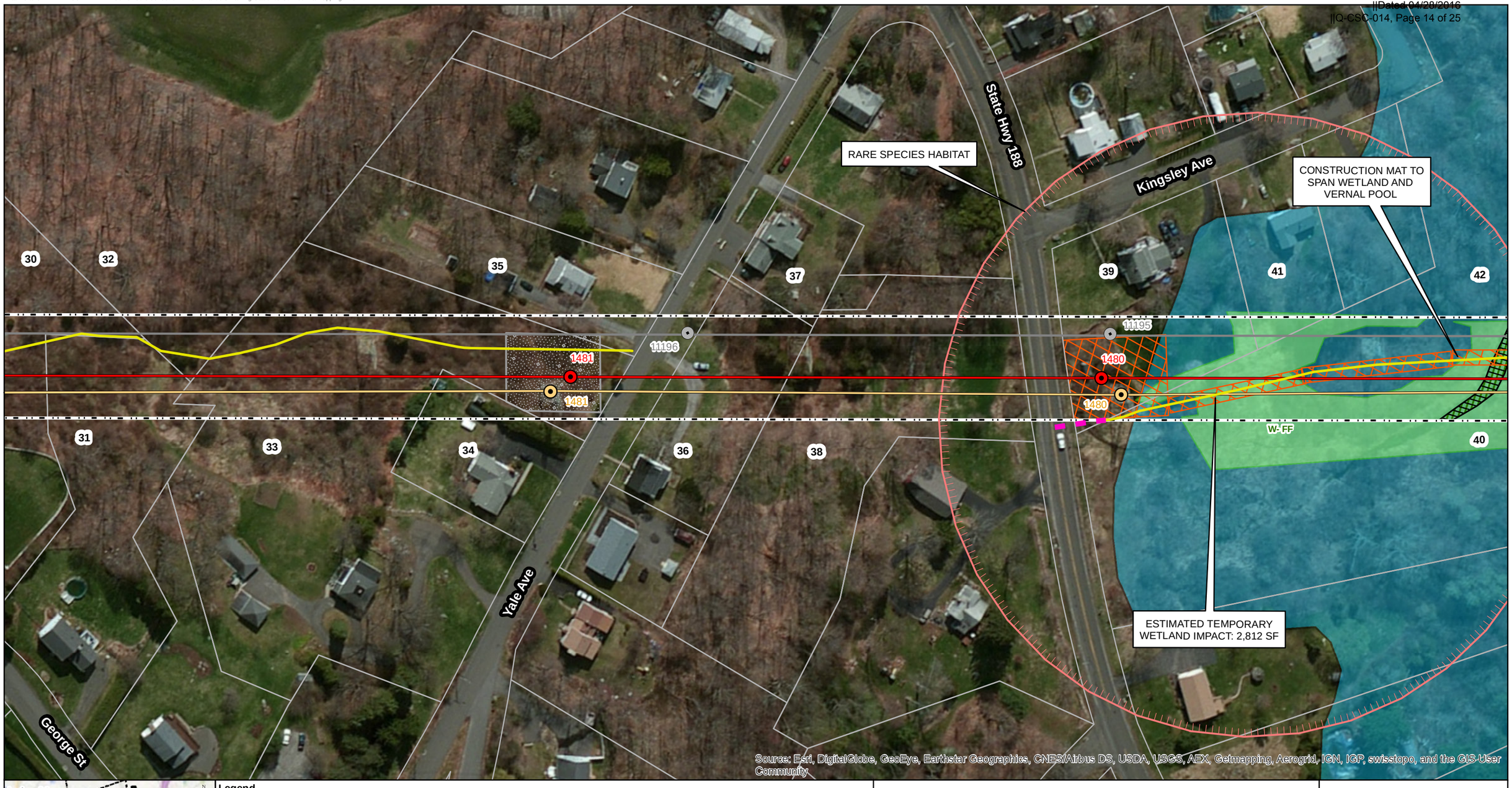

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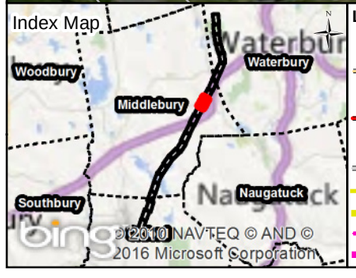

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TOWANTIC SWITCHING STATION AND LINE PROJECT

APRIL 1, 2016

WATERBURY, MIDDLEBURY, & OXFORD, CT
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ESTIMATED TEMPORARY WETLAND IMPACT: 11,407 SF

ESTIMATED PERMANENT WETLAND IMPACT: 64 SF

ESTIMATED TEMPORARY WETLAND IMPACT: 3,359 SF

ESTIMATED PERMANENT WETLAND IMPACT: 32 SF

CONSTRUCTION MAT TO SPAN WETLAND AND VERNAL POOL

PROTECT SEWER LINE R.O.W. OFF TOWER RD

RARE SPECIES HABITAT

PULL PAD

Hop Brook

42 40 43 44 46 45

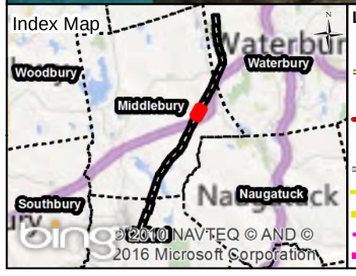
11194 11193 11192

W- FF W-EE1 W- EE

1479 1478C 1478 1478A 1478B Baldwin Tap Baldwin Tap 1477A 1477A

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

Index Map



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TOWANTIC SWITCHING STATION AND LINE PROJECT

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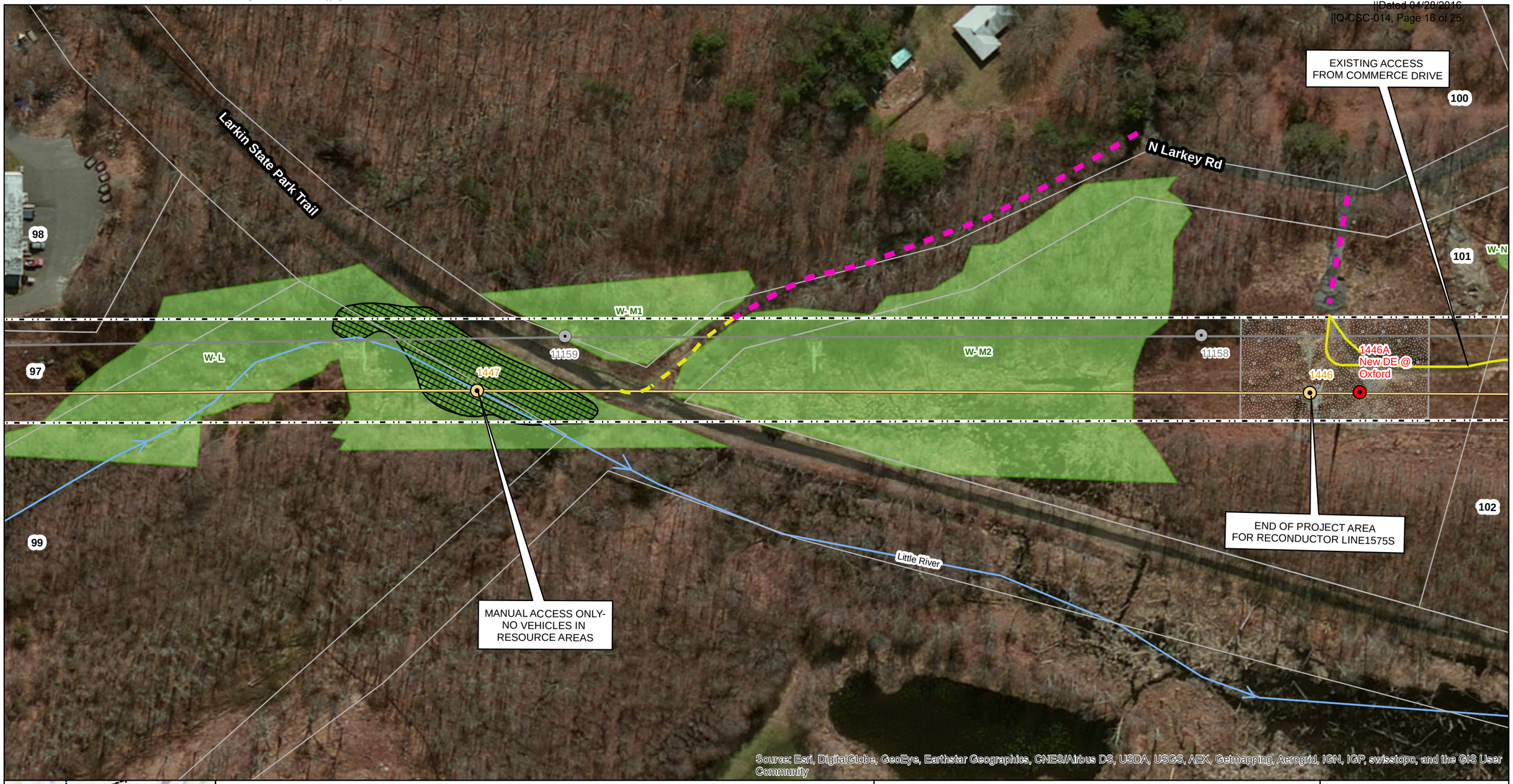
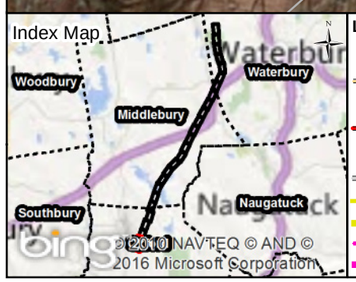


Index Map



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TOWANTIC SWITCHING STATION AND LINE PROJECT

APRIL 1, 2016

WATERBURY, MIDDLEBURY, & OXFORD, CT
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US Army Corps of Engineers - New England District
DRAFT Vernal Pool Characterization Form

Project File # 15.0029840.12 Project Name Towantic Switching Station & Line Modification Project Pool ID L
Observer Steven Riberdy Phone or E-mail 413-726-2112
Landowner/Applicant Eversource Phone or E-mail
Address 56 Prospect St. City Hartford State CT Zip 06103
Location of vernal pool: City/State Oxford, CT
Survey date(s) 3/31/2016
Longitude/Latitude (in decimal degrees) Long: -73.129037 Lat: 41.473534

A. VERNAL POOL CHARACTERISTICS (fill in all information known):

1. Landscape setting (check all that apply):

☐ Upland depression (4 pts; if this is also in a floodplain, use 2 pts)
☒ Pool part of wildlife corridor (4 pts)
☐ Pool part of a pool complex (within 1000 feet of one or more other vernal pools) (NA)
☒ Pool within larger wetland system (4 pts; if this is also in a floodplain, use 2 pts)
☐ Other:_____(variable pts)

2. Vernal pool condition:

Describe any recent modifications to the pool and associated landscape: _____

3. Parent material:

☐ Glacial fluvial ("outwash")
☒ Loose till
☐ Peat
☐ Dense till
☐ Alluvium
☐ Coastal marine sediments

4. Aquatic resource type that best applies to this pool (choose dominant):

☐ Forested wetland (4 pts)
☒ Herbaceous wetland (4 pts)
☐ Floodplain (overflow/oxbow) (3 pts)
☐ Shrub wetland (4 pts)
☐ Open water (2 pts)
☐ Other:_____(variable points)
☐ Peatland (acidic fen or bog) (4 pts)
☐ Intermittent stream reach (2 pts)

5. Pool canopy cover (%): 20%

6. Predominant substrate:

☐ Mineral soil
☒ Organic matter (peat/muck) Depth 12-24" Sampling location (e.g., deepest zone, edge, etc.) Deepest Zone

7. Pool size:

a. Approximate dimensions of pool (at maximum capacity; include units): Length 200' Width 80'
Area: 16,000 Square feet

b. Maximum depth at deepest point at time of survey (include units): 24"

8. Hydrology:

a. Estimated hydroperiod (unless actual, observed hydroperiod value(s) is(are) known, use the presence of these example indicator species to best predict the expected hydroperiod of the pool):

☐ Dries between early March and early July (e.g., *Thelypteris palustris, Carex stricta, Impatiens capensis, Ilex verticillata*) (6 pts)
☒ Dries between early July and early September (e.g., *Sagittaria latifolia, Scirpus cyperinus, Dulichium arund., Cephalanthus occ.*) (8 pts)
☐ Dries between early September and early November (e.g., *Eleocharis palustris, Glyceria cana., Utricularia* spp., *Decodon vert.*) (8 pts)
☐ Dries between early November and late December, or intermittently exposed (e.g., *Nuphar* spp., *Potamogeton* spp.) (2 pts)

b. Inlet/outlet (pick one):

☐ No inlet/outlet (8 pts)
☐ Permanent inlet or outlet (channel with well-defined banks and permanent flow) (2 pts)
☒ Temporary inlet/outlet (6 pts)

9. Water quality:

☒ Clear
☐ High turbidity
☐ High algae content
☐ Tannic

26 **TOTAL for Pool Characteristics (out of 28 max.)**

Pool ID 1

B. VERNAL POOL ENVELOPE (100 ft) AND CRITICAL HABITAT AREA (100-750 ft) CHARACTERISTICS (fill in all information known):

1. Landuse type and approximate percentage within the 100-ft vernal pool envelope:

[X] Forested 50 % (16 pts) [X] Open (e.g., meadow, agriculture, golf course) 10 % (4 pts)

[X] Shrub 40 % (10 pts) [ ] Developed _____ % (0 pts)

2. **Landuse type and approximate percentage within the 100 - 750-ft vernal pool critical terrestrial habitat:**

[X] Forested 40 % (16 pts) [X] Open (e.g., agriculture, golf course) 25 % (4 pts)

[X] Shrub 25 % (10 pts) [X] Developed 10 % (0 pts)

[ ] Are there one or more barriers to vernal pool fauna movement within the envelope and/or critical terrestrial habitat? If so, check here and see directions for explanation of how to incorporate this information.

Based on: [ ] Field estimate [ ] GIS [ ] Aerial photo estimate

24 **TOTAL for Pool Envelope and Critical Terrestrial Habitat Area (out of 32 max.)**

C. SPECIES PRESENT IN VERNAL POOL

INDICATOR SPECIES	DATE	EGG MASSES (#)	TADPOLES/LARVAE
Wood Frog (*Lithobates sylvaticus*)	3/31	10	
Spotted Salamander (*Ambystoma maculatum*)	3/31	15	
Blue-spotted Salamander (*Ambystoma laterale*)			
Jefferson's Salamander (*Ambystoma jeffersonianum*)			
Marbled Salamander (*Ambystoma opacum*)			
Fairy Shrimp (*Eubranchipus* spp.)		**PRESENT/ABSENT**	**ABUNDANCE:**
OTHER SPECIES	**DATE**	**PRESENCE/ABSENCE**	**FEW/COMMON/MANY**
Facultative Species (e.g., Spring Peeper (*Pseudacris crucifer*), Gray Tree Frog (*Hyla versicolor*), Caddisflies (Limnephilidae, Phryganeidae), American Toad (*Anaxyrus americanus*), Eastern Spadefoot Toad (*Scaphiopus holbrookii*), Fowler's Toad (*Anaxyrus fowleri*), Fingernail Clams (Sphaeriidae, Pisidiidae))(list): SP. Peepers Calling, Caddis Fly	3/31	Peepers - Calling Caddis Fly	Common
Rare Species (list): _____			
Predator Species (e.g., Bullfrog/Green frog tadpoles, Fish) (list): _____			
Other species (e.g., Ducks, Turtles, etc.)(list): _____			

Presence of Indicator Species [X] Yes [ ] No

SUMMARY:

26 **TOTAL for Pool Characteristics** 24 **TOTAL for Pool Envelope and Critical Terrestrial Habitat Area**

Other comments (append photographs, additional notes, sketch of pool and surrounding landscape):

Pool along inlet stream, very deep muck, open in center, shrubs long on edges. Partly forested wetland on edges. High quality vernal pool despite being along intermittant stream with temporary inlet and outlet.

VERNAL POOL ASSESSMENT SHEET

Pool in wetland L

A. Biological Value of the Vernal Pool

(1) Are there *any* state-listed species (Endangered, Threatened, or Special Concern) present or breeding in the pool?
Yes_____ No__X__

(2) Are there two or more vernal pool indicator species breeding (i.e., evidence of egg masses, spermatophores [sperm packets], mating, larvae) in the pool?
Yes__✓__ No_____

(3) Are there 25 or more egg masses (regardless of species) present in the pool by the conclusion of the breeding season?
Yes__✓__ No_____

B. Condition of the Critical Terrestrial Habitat

(1) Is at least 75% of the vernal pool envelope (100 feet from pool) undeveloped?
Yes__✓__ No_____

(2) Is at least 50% of the critical terrestrial habitat (100-750 feet) undeveloped?
Yes__✓__ No_____

NOTE: For these purposes, "undeveloped" means open land largely free of roads, structures, and other infrastructure. It can be forested, partially forested, or open agricultural land.

Cumulative Assessment

Number of questions answered YES in category A	Number of questions answered YES in category B	Tier Rating
(1-3)	(2)	(Tier I)
1-3	1	Tier II
0	1-2	Tier III
1-3	0	Tier III

CAUTION *This rating system is designed strictly as a planning tool, not as an official assessment tool.* It will enable you to determine the relative ecological value of pools within your community. A Tier I rating—which will most likely apply to only a minority of sites—denotes exemplary pools; Management Recommendations should be applied at these sites. For pools rated as Tier II, proceed with care; you need more information! Tier II pools will probably constitute the majority of your vernal pool resources; Management Recommendations should be applied at these sites to the maximum extent practicable. Tier II pools might also be likely candidates for restoration efforts (e.g., reforestation of the critical terrestrial habitat).

US Army Corps of Engineers - New England District
DRAFT Vernal Pool Characterization Form

Project File # 15.0029840.12 Project Name Towantic Switching Station & Line Modification Project Pool ID FF
Observer Steven Riberdy Phone or E-mail 413-726-2112
Landowner/Applicant Eversource Phone or E-mail
Address 56 Prospect St. City Hartford State CT Zip 06103
Location of vernal pool: City/State Middlebury, CT
Survey date(s) 3/31/2016
Longitude/Latitude (in decimal degrees) Long:-73.094512 Lat: 41.526114

A. VERNAL POOL CHARACTERISTICS (fill in all information known):

1. Landscape setting (check all that apply):

[X] Upland depression (4 pts; if this is also in a floodplain, use 2 pts)
[X] Pool part of wildlife corridor (4 pts)
[ ] Pool part of a pool complex (within 1000 feet of one or more other vernal pools) (NA)
[X] Pool within larger wetland system (4 pts; if this is also in a floodplain, use 2 pts)
[ ] Other:_____(variable pts)

2. Vernal pool condition:

Describe any recent modifications to the pool and associated landscape: Right of Way Clearing

3. Parent material:

[ ] Glacial fluvial ("outwash")
[X] Loose till
[ ] Peat
[ ] Dense till
[X] Alluvium
[ ] Coastal marine sediments

4. Aquatic resource type that best applies to this pool (choose dominant):

[ ] Forested wetland (4 pts)
[X] Herbaceous wetland (4 pts)
[ ] Floodplain (overflow/oxbow) (3 pts)
[ ] Shrub wetland (4 pts)
[ ] Open water (2 pts)
[ ] Other:_____(variable points)
[ ] Peatland (acidic fen or bog) (4 pts)
[ ] Intermittent stream reach (2 pts)

5. Pool canopy cover (%): 10%

6. Predominant substrate:

[ ] Mineral soil
[X] Organic matter (peat/muck) Depth 18" Sampling location (e.g., deepest zone, edge, etc.) Middle

7. Pool size:

a. Approximate dimensions of pool (at maximum capacity; include units): Length 100' Width 10'
Area: 1000 Square Feet

b. Maximum depth at deepest point at time of survey (include units): 12"

8. Hydrology:

a. Estimated hydroperiod (unless actual, observed hydroperiod value(s) is(are) known, use the presence of these example indicator species to best predict the expected hydroperiod of the pool):

[X] Dries between early March and early July (e.g., *Thelypteris palustris, Carex stricta, Impatiens capensis, Ilex verticillata*) (6 pts)
[ ] Dries between early July and early September (e.g., *Sagittaria latifolia, Scirpus cyperinus, Dulichium arund., Cephalanthus occ.*) (8 pts)
[ ] Dries between early September and early November (e.g., *Eleocharis palustris, Glyceria cana., Utricularia* spp., *Decodon vert.*) (8 pts)
[ ] Dries between early November and late December, or intermittently exposed (e.g., *Nuphar* spp., *Potamogeton* spp.) (2 pts)

b. Inlet/outlet (pick one):

[ ] No inlet/outlet (8 pts)
[ ] Permanent inlet or outlet (channel with well-defined banks and permanent flow) (2 pts)
[X] Temporary inlet/outlet (6 pts)

9. Water quality:

[X] Clear
[ ] High turbidity
[ ] High algae content
[ ] Tannic

24 **TOTAL for Pool Characteristics (out of 28 max.)**

Pool ID FF

B. VERNAL POOL ENVELOPE (100 ft) AND CRITICAL HABITAT AREA (100-750 ft) CHARACTERISTICS (fill in all information known):

1. Landuse type and approximate percentage within the 100-ft vernal pool envelope:

[X] Forested 10 % (16 pts) [X] Open (e.g., meadow, agriculture, golf course) 30 % (4 pts)

[X] Shrub 40 % (10 pts) [X] Developed 20 % (0 pts)

2. **Landuse type and approximate percentage within the 100 - 750-ft vernal pool critical terrestrial habitat:**

[X] Forested 20 % (16 pts) [X] Open (e.g., agriculture, golf course) 20 % (4 pts)

[X] Shrub 40 % (10 pts) [X] Developed 20 % (0 pts)

[ ] Are there one or more barriers to vernal pool fauna movement within the envelope and/or critical terrestrial habitat? If so, check here and see directions for explanation of how to incorporate this information.

Based on: [ ] Field estimate [ ] GIS [ ] Aerial photo estimate

16 **TOTAL for Pool Envelope and Critical Terrestrial Habitat Area (out of 32 max.)**

C. SPECIES PRESENT IN VERNAL POOL

INDICATOR SPECIES	DATE	EGG MASSES (#)	TADPOLES/LARVAE
Wood Frog (*Lithobates sylvaticus*)	3/31	15	Hatching
Spotted Salamander (*Ambystoma maculatum*)			
Blue-spotted Salamander (*Ambystoma laterale*)			
Jefferson's Salamander (*Ambystoma jeffersonianum*)			
Marbled Salamander (*Ambystoma opacum*)			
Fairy Shrimp (*Eubranchipus* spp.)		**PRESENT/ABSENT**	**ABUNDANCE:**
OTHER SPECIES	**DATE**	**PRESENCE/ABSENCE**	**FEW/COMMON/MANY**
Facultative Species (e.g., Spring Peeper (*Pseudacris crucifer*), Gray Tree Frog (*Hyla versicolor*), Caddisflies (Limnephilidae, Phryganeidae), American Toad (*Anaxyrus americanus*), Eastern Spadefoot Toad (*Scaphiopus holbrookii*), Fowler's Toad (*Anaxyrus fowleri*), Fingernail Clams (Sphaeriidae, Pisidiidae))(list):			
Rare Species (list):			
Predator Species (e.g., Bullfrog/Green frog tadpoles, Fish) (list):			
Other species (e.g., Ducks, Turtles, etc.)(list):			

Presence of Indicator Species [X] Yes [ ] No

SUMMARY:

24 **TOTAL for Pool Characteristics** 16 **TOTAL for Pool Envelope and Critical Terrestrial Habitat Area**

Other comments (append photographs, additional notes, sketch of pool and surrounding landscape):

Long ditch across right of way, mucky bottom, holds MAX 24" water, 12" observed.
Wood Frog egg masses hatching, more found outside of right of way

VERNAL POOL ASSESSMENT SHEET

Pool in Wetland FF

A. Biological Value of the Vernal Pool

(1) Are there *any* state-listed species (Endangered, Threatened, or Special Concern) present or breeding in the pool?
Yes_____ No__X__

(2) Are there two or more vernal pool indicator species breeding (i.e., evidence of egg masses, spermatophores [sperm packets], mating, larvae) in the pool?
Yes_____ No__X__

(3) Are there 25 or more egg masses (regardless of species) present in the pool by the conclusion of the breeding season?
Yes__X__ No__[illegible]__ (Note: >25 Total within and outside of ROW)

B. Condition of the Critical Terrestrial Habitat

(1) Is at least 75% of the vernal pool envelope (100 feet from pool) undeveloped?
Yes__✓__ No_____

(2) Is at least 50% of the critical terrestrial habitat (100-750 feet) undeveloped?
Yes__✓__ No_____

NOTE: For these purposes, "undeveloped" means open land largely free of roads, structures, and other infrastructure. It can be forested, partially forested, or open agricultural land.

Cumulative Assessment

Number of questions answered YES in category A	Number of questions answered YES in category B	Tier Rating
(1-3)	(2)	(Tier I)
1-3	1	Tier II
0	1-2	Tier III
1-3	0	Tier III

CAUTION *This rating system is designed strictly as a planning tool, not as an official assessment tool.* It will enable you to determine the relative ecological value of pools within your community. A Tier I rating—which will most likely apply to only a minority of sites—denotes exemplary pools; Management Recommendations should be applied at these sites. For pools rated as Tier II, proceed with care; you need more information! Tier II pools will probably constitute the majority of your vernal pool resources; Management Recommendations should be applied at these sites to the maximum extent practicable. Tier II pools might also be likely candidates for restoration efforts (e.g., reforestation of the critical terrestrial habitat).

US Army Corps of Engineers - New England District
DRAFT Vernal Pool Characterization Form

Project File # 15.0029840.12 Project Name Towantic Switching Station & Line Modification Project Pool ID GG
Observer Steven Riberdy Phone or E-mail 413-726-2112
Landowner/Applicant Eversource Phone or E-mail
Address 56 Prospect st. City Hartford State CT Zip 06103
Location of vernal pool: City/State Middlebury, CT
Survey date(s) 3/31/206
Longitude/Latitude (in decimal degrees) Long: -73.091237 Lat: 41.530653

A. VERNAL POOL CHARACTERISTICS (fill in all information known):

1. Landscape setting (check all that apply):

☒ Upland depression (4 pts; if this is also in a floodplain, use 2 pts)
☐ Pool part of wildlife corridor (4 pts)
☐ Pool part of a pool complex (within 1000 feet of one or more other vernal pools) (NA)
☒ Pool within larger wetland system (4 pts; if this is also in a floodplain, use 2 pts)
☐ Other:_____(variable pts)

2. Vernal pool condition:

Describe any recent modifications to the pool and associated landscape: _____

3. Parent material:

☐ Glacial fluvial ("outwash")
☒ Loose till
☐ Peat
☐ Dense till
☐ Alluvium
☐ Coastal marine sediments

4. Aquatic resource type that best applies to this pool (choose dominant):

☐ Forested wetland (4 pts)
☐ Herbaceous wetland (4 pts)
☐ Floodplain (overflow/oxbow) (3 pts)
☒ Shrub wetland (4 pts)
☐ Open water (2 pts)
☐ Other:_____(variable points)
☐ Peatland (acidic fen or bog) (4 pts)
☐ Intermittent stream reach (2 pts)

5. Pool canopy cover (%): 30%

6. Predominant substrate:

☐ Mineral soil
☒ Organic matter (peat/muck) Depth 12-24" Sampling location (e.g., deepest zone, edge, etc.) Middle

7. Pool size:

a. Approximate dimensions of pool (at maximum capacity; include units): Length 50' Width 80'
Area: 4000 Square feet

b. Maximum depth at deepest point at time of survey (include units): 24"

8. Hydrology:

a. Estimated hydroperiod (unless actual, observed hydroperiod value(s) is(are) known, use the presence of these example indicator species to best predict the expected hydroperiod of the pool):

☐ Dries between early March and early July (e.g., *Thelypteris palustris, Carex stricta, Impatiens capensis, Ilex verticillata*) (6 pts)
☒ Dries between early July and early September (e.g., *Sagittaria latifolia, Scirpus cyperinus, Dulichium arund., Cephalanthus occ.*) (8 pts)
☐ Dries between early September and early November (e.g., *Eleocharis palustris, Glyceria cana., Utricularia* spp., *Decodon vert.*) (8 pts)
☐ Dries between early November and late December, or intermittently exposed (e.g., *Nuphar* spp., *Potamogeton* spp.) (2 pts)

b. Inlet/outlet (pick one):

☒ No inlet/outlet (8 pts)
☐ Permanent inlet or outlet (channel with well-defined banks and permanent flow) (2 pts)
☐ Temporary inlet/outlet (6 pts)

9. Water quality:

☒ Clear
☐ High turbidity
☐ High algae content
☐ Tannic

28 **TOTAL for Pool Characteristics (out of 28 max.)**

Pool ID GG

B. VERNAL POOL ENVELOPE (100 ft) AND CRITICAL HABITAT AREA (100-750 ft) CHARACTERISTICS (fill in all information known):

1. Landuse type and approximate percentage within the 100-ft vernal pool envelope:

[X] Forested 20 % (16 pts) [X] Open (e.g., meadow, agriculture, golf course) 60 % (4 pts)

[X] Shrub 20 % (10 pts) [ ] Developed _____ % (0 pts)

2. **Landuse type and approximate percentage within the 100 - 750-ft vernal pool critical terrestrial habitat:**

[X] Forested 20 % (16 pts) [X] Open (e.g., agriculture, golf course) 40 % (4 pts)

[X] Shrub 20 % (10 pts) [X] Developed 20 % (0 pts)

[ ] Are there one or more barriers to vernal pool fauna movement within the envelope and/or critical terrestrial habitat? If so, check here and see directions for explanation of how to incorporate this information.

Based on: [ ] Field estimate [ ] GIS [ ] Aerial photo estimate

16 **TOTAL for Pool Envelope and Critical Terrestrial Habitat Area (out of 32 max.)**

C. SPECIES PRESENT IN VERNAL POOL

INDICATOR SPECIES	DATE	EGG MASSES (#)	TADPOLES/LARVAE
Wood Frog (*Lithobates sylvaticus*)	3/31	40	
Spotted Salamander (*Ambystoma maculatum*)	3/31	12	
Blue-spotted Salamander (*Ambystoma laterale*)			
Jefferson's Salamander (*Ambystoma jeffersonianum*)			
Marbled Salamander (*Ambystoma opacum*)			
Fairy Shrimp (*Eubranchipus* spp.)		**PRESENT/ABSENT**	**ABUNDANCE:**
OTHER SPECIES	**DATE**	**PRESENCE/ABSENCE**	**FEW/COMMON/MANY**
Facultative Species (e.g., Spring Peeper (*Pseudacris crucifer*), Gray Tree Frog (*Hyla versicolor*), Caddisflies (Limnephilidae, Phryganeidae), American Toad (*Anaxyrus americanus*), Eastern Spadefoot Toad (*Scaphiopus holbrookii*), Fowler's Toad (*Anaxyrus fowleri*), Fingernail Clams (Sphaeriidae, Pisidiidae))(list): _____ _____ _____			
Rare Species (list): _____ _____			
Predator Species (e.g., Bullfrog/Green frog tadpoles, Fish) (list): _____			
Other species (e.g., Ducks, Turtles, etc.)(list): _____ _____			

Presence of Indicator Species [X] Yes [ ] No

SUMMARY:

28 **TOTAL for Pool Characteristics** 16 **TOTAL for Pool Envelope and Critical Terrestrial Habitat Area**

Other comments (append photographs, additional notes, sketch of pool and surrounding landscape):

VERNAL POOL ASSESSMENT SHEET

Pool in wetland 6G

A. Biological Value of the Vernal Pool

(1) Are there *any* state-listed species (Endangered, Threatened, or Special Concern) present or breeding in the pool?
Yes_____ No__X__

(2) Are there two or more vernal pool indicator species breeding (i.e., evidence of egg masses, spermatophores [sperm packets], mating, larvae) in the pool?
Yes__✓__ No_____

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Yes__✓__ No_____

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(1) Is at least 75% of the vernal pool envelope (100 feet from pool) undeveloped?
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Witness: **Witness Panel**
Request from: **Connecticut Siting Council**

Question:
How would Evesource remove old conductors and string new conductors across Long Meadow Pond? See Sheet 19.

Response:
Utilizing the pull pad depicted on Sheet 19 and the large pad depicted on Sheet 22, the new conductor would be attached to the end of a section of existing conductor on one side of the pond. The existing conductor would then be detached from the existing structure at this point. The conductor would then be pulled from the opposite side of the pond under constant tension and shifted to be in line with the new structure orientation. During the pulling operation, the old conductor would be pulled off of the existing structures, the new conductor would be strung onto the new structures and the constant tension would prevent contact with the pond.

Witness: **Witness Panel**
Request from: **Connecticut Siting Council**

Question:
Would an underground transmission connection from the switching station to the 1575, 1585, and 1990 lines be feasible? Please provide a cost estimate of an underground transmission connection from the proposed switching station to the transmission lines in the right-of-way. Compare this cost to the proposed overhead configuration.

Response:
An underground transmission connection from the Switching Station to the 1575, 1585 and 1990 lines is not feasible due to physical space constraints within the Switching Station. There is not adequate space within the Switching Station footprint to accommodate four (4) additional underground riser structures that would be required to install underground transmission connections to all three transmission lines.

Witness: **Witness Panel**
Request from: **Connecticut Siting Council**

Question:
On page B-8 of the Petition, Eversource notes that impulse noise from circuit breakers are possible during short-circuit events or for maintenance outages. Would Eversource meet DEEP Noise Standards relative to Impulse Noise in Section 22a-69-3.2 of such noise standards?

Response:
In accordance with Section 22a-69-1.7(f) of the Connecticut DEEP noise regulations, these noise regulations (including Section 22a-69-3.2) do not apply to sound created by safety and protective devices, which include devices such as circuit breakers..

Witness: **Witness Panel**
Request from: **Connecticut Siting Council**

Question:
How would the proposed switching station affect magnetic field levels at the boundaries of CPV's property?

Response:
The magnetic fields at the boundaries of CPV's property will be dominated by the transmission lines entering and exiting the property. The fields from substation buswork, circuit breakers, and other equipment within the switching station will be below background levels at the boundaries of the CPV property.

Witness: **Witness Panel**
Request from: **Connecticut Siting Council**

Question:
Does Eversource plan to use optimum phasing of the two circuits (1575 and 1585) on the proposed double-circuit structures as an EMF mitigation measure?

Response:
Yes. Optimum phasing was incorporated between all three transmission circuits on the ROW. The calculations in the petition reflect this.

Witness: **Witness Panel**
Request from: **Connecticut Siting Council**

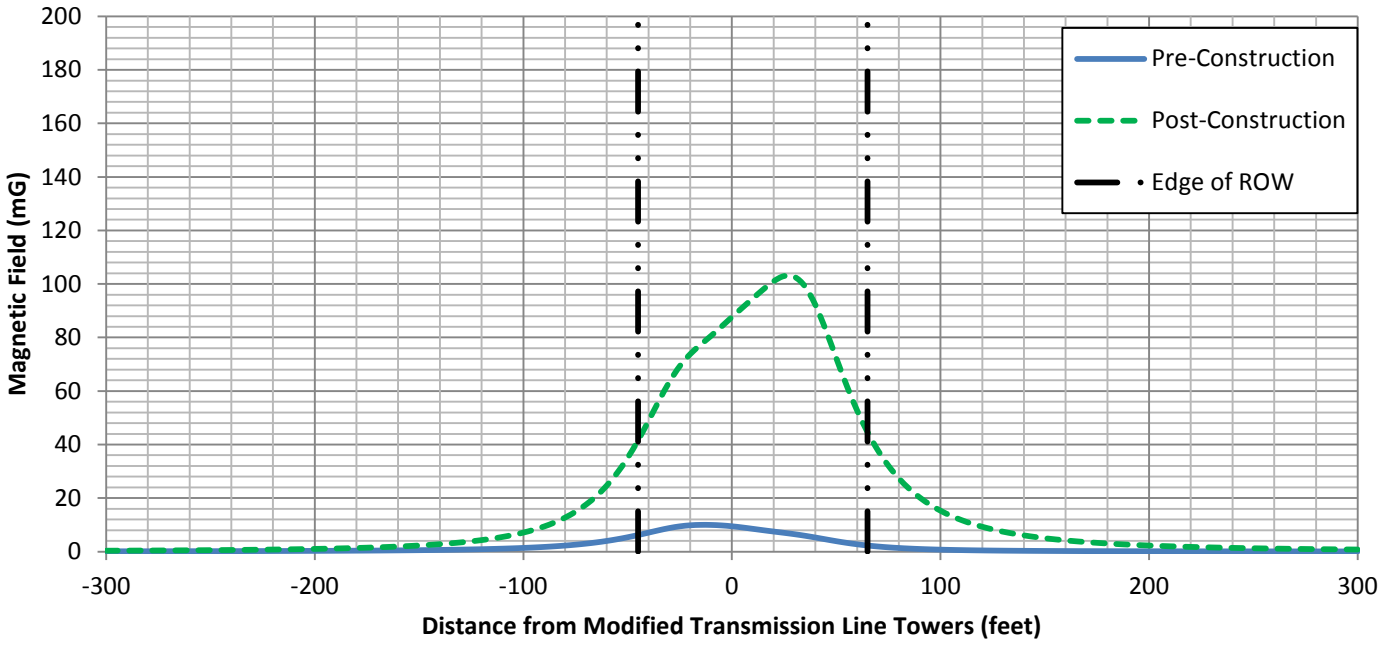
Question:
On page D-18 of the Petition, Eversource notes that, "Calculations of EMF were not performed for the reconductoring portion of the Project, between Towantic Switching Station and Oxford Substation, as no change to the electric field at the edges of the ROW will occur as result of the Project." How would magnetic fields change from pre-construction to post-construction at the eastern and western edges of the ROW for the reconductoring portion of the project? While the line geometry/configuration would be very similar, would the change in magnetic fields, if applicable, be due to changing power flows due to the power plant?

Response:
Yes, the power flows, and therefore magnetic fields, would change as a result of introducing an operating generator onto the system. The calculations are attached. The calculations based on these assumptions are attached and assume an average annual load with a typical generator dispatch including 765 megawatts of output from the CPV Towantic generating station.

Magnetic Field Calculations (mG - AAL)	West ROW Edge		Max in ROW		East ROW Edge	
	Pre	Post	Pre	Post	Pre	Post
Oxford to Towantic	6.2	41.6	10.0	103.2	2.3	44.7

Electric Field Calculations (kV/m)	West ROW Edge		Max in ROW		East ROW Edge	
	Pre	Post	Pre	Post	Pre	Post
Oxford to Towantic	0.61	0.61	1.70	1.70	0.34	0.34

Calculation Magnetic Fields (Average Annual Load)
Oxford S/S to Townatic



Calculation Electric Fields
Oxford S/S to Townatic